

A new species and new records of *Hentzia* (Araneae: Salticidae: Dendryphantinae) from the United States

David B. Richman: Department of Entomology Plant Pathology and Weed Science, New Mexico State University, Las Cruces, New Mexico 88003 USA. E-mail: nmbugman@taipan.nmsu.edu

Abstract. *Hentzia alamosa* (Salticidae) is described from Big Bend Ranch State Park in Presidio County, Texas, and a closely related species, *Hentzia fimbriata* (F.O. Pickard-Cambridge 1901) is recorded for the first time from the USA. Both species are also closely related to *Hentzia palmarum* (Hentz 1832), the type species for the genus. New locality records provided by the Texas A & M University Insect Collection (TAMUIC) for *H. palmarum* are also included.

Keywords: Jumping spiders, Texas, Arizona

The genus *Hentzia* is primarily circum-Caribbean-Gulf of Mexico in nature, centered in Cuba, where seven of the 20 known species have been collected (Richman 1989). However, the genus has several outlier species in western North America. One species, *Hentzia pima* Richman 1989, was described from the Baboquivari Mountains of Arizona, *Hentzia fimbriata* (F.O. Pickard-Cambridge 1901) reaches the west coast of Mexico in Nayarit, and *H. poenitens* (Chamberlin 1924) is known only from the Gulf Coast of Sonora (Richman 1989). *Hentzia palmarum* (Hentz 1832) and *H. mitrata* (Hentz 1846) are both known from eastern Texas, with *H. palmarum* reaching western Texas in the panhandle (Richman 1989). Since the revision of the genus (Richman 1989), specimens have been collected in southern Arizona and southwestern Texas that have expanded our understanding of the distribution of the genus. In this paper I am bringing the genus up to date by describing a new species from the region of Big Bend in Presidio County, Texas, adding several records for the Mexican species *H. fimbriata* from Arizona, and also adding new records of *H. palmarum* from south-central Texas. All of these species are in the *palmarum* species group, with the males of the new species and *H. fimbriata* resembling this widespread eastern species.

METHODS

Methods used for this description were described by Richman (1989). All specimens examined for the description of the new species were measured using an Olympus® binocular dissecting microscope with a measuring reticle in a 20× eyepiece calibrated with a stage micrometer of 1 mm divided into hundredths. All measurements are in mm. Specimens of the new species are deposited in the collections of Texas A & M University, College Station, Texas; the Florida State Collection of Arthropods, Gainesville, Florida; and the Arthropod Museum at New Mexico State University, Las Cruces, New Mexico. Anatomical photographs were made with an Optronics Magnifier-SP® electronic camera attached to a Leica MZ 16® binocular microscope and Dell® laptop computer at the Biological Control Insectary, Department of Entomology, Plant Pathology and Weed Science, New Mexico State University.

TAXONOMY

Family Salticidae Blackwell 1841

Genus *Hentzia* Marx 1883

Attus Walckenaer 1805 (applied to nearly all salticids – junior synonym of *Salticus* Latreille 1804)

Epiblemum Hentz 1832 (applied to *Salticus* as well as *Hentzia*)
Hentzia Marx 1883, type species *palmarum* (Hentz) 1832.

Wala Keyserling 1885, type species *palmarum* (Hentz) 1832.
Synonymy: Bryant 1940.

Anoka Peckham and Peckham 1893, type species *vernalis*
Peckham and Peckham 1893. Synonymy: Bryant 1940.

Parahentzia Bryant 1943, type species *mandibularis* Bryant 1943. Synonymy: Richman 1989.

Maeviobeata Caporiacco 1847, type species *charitonovi* Caporiacco 1947 (= *Anoka parallela* Peckham and Peckham 1894.) Synonymy: Richman 1989.

Type species.—*Epiblemum palmarum* Hentz 1832, original designation

Hentzia alamosa new species

Figs. 1–10, 17

Type material.—Female holotype, USA: Texas: Cuevas Amarillas, Big Bend Ranch State Park, Presidio County, Texas (29°29'41.5"N 104° 06' 00"W, 1094.5 m), 28 March 2004, D.B. Richman, beating cottonwood along wash east of caves, deposited in the collection of Texas A & M Insect Collection (TAMUIC), College Station, Texas. Male and female paratypes: same data as holotype. Male paratype deposited in TAMUIC; female paratype deposited in the Florida State Collection of Arthropods, Gainesville, Florida.

Other material.—USA: Texas: 2 females, Ojito Adentro, Big Bend Ranch State Park, Presidio County (29°29'28.8"N, 104°03'42"W, 1162 m), 14 October 2000 (TAMUIC) and 27 March 2004 (Arthropod Museum, New Mexico State University - NMSU), D.B. Richman. Beating cottonwoods.

Distribution.—Known only from Big Bend area.

Etymology.—The name is taken from the Spanish alamo for cottonwood, the trees on which this species has so far been collected.

Diagnosis.—Males of this species would key out to *Hentzia palmarum* in Richman (1989), but the females have a very distinctive flattened to normal U-shaped atrium above the bell-like central structure (Figs. 4, 5, 9, 10). *Hentzia palmarum* has either two separate openings or these are connected as an upside-down, U-shaped depression (Figs. 11–15 and Richman (1989, figs. 24, 26).

Females so far collected, with the exception of one from Ojito Adentro (TAMUIC), which had three sets of distinct paired brown spots on the dorsum, lack a pattern on their abdomen except for a few tiny spots and occasionally vague



Figure 1.—Habitat of *Hentzia alamosa* new species near Cuevas Amarillas, Big Bend Ranch State Park, Presidio County, Texas. Adults were collected in the cottonwood trees in the background.



Figure 2.—Female holotype of *Hentzia alamosa* new species from Big Bend Ranch State Park, Presidio County, Texas. Note light legs and general lack of distinct markings.



Figure 3.—Male allotype of *Hentzia alamosa* new species from Big Bend Ranch State Park, Presidio County, Texas. Note white band on dorsal abdomen anterior to spinnerets.

streaks, whereas most *H. palmarum* females have at least a faint, but distinct, set of blotches and chevrons (see Kaston 1978; Richman 1989). Females of *H. alamosa* also have all pale legs, whereas in *H. palmarum* females the front pair is darker than the rest. The male chelicerae (Figs. 6, 17) differ from those of *H. fimbriata*, in which the teeth are evenly spaced (Richman 1989, fig. 37), and more closely resembled those of *H. palmarum*. However, in *H. palmarum* the retro-marginal tooth is usually slightly more proximal than the proximal promarginal tooth (Richman 1989, figs. 18, 19), while in *H. alamosa* the proximal promarginal and retro-marginal teeth are almost exactly in line when viewed ventrally (Fig. 17). The one male collected also had a very light band on the tip of its abdomen, which has not been seen in *H. palmarum*. This is the first *Hentzia* reported from the Chihuahuan Desert, and the type locality is approximately 385 km southwest of the nearest known records for *Hentzia palmarum* in Edwards County, Texas.

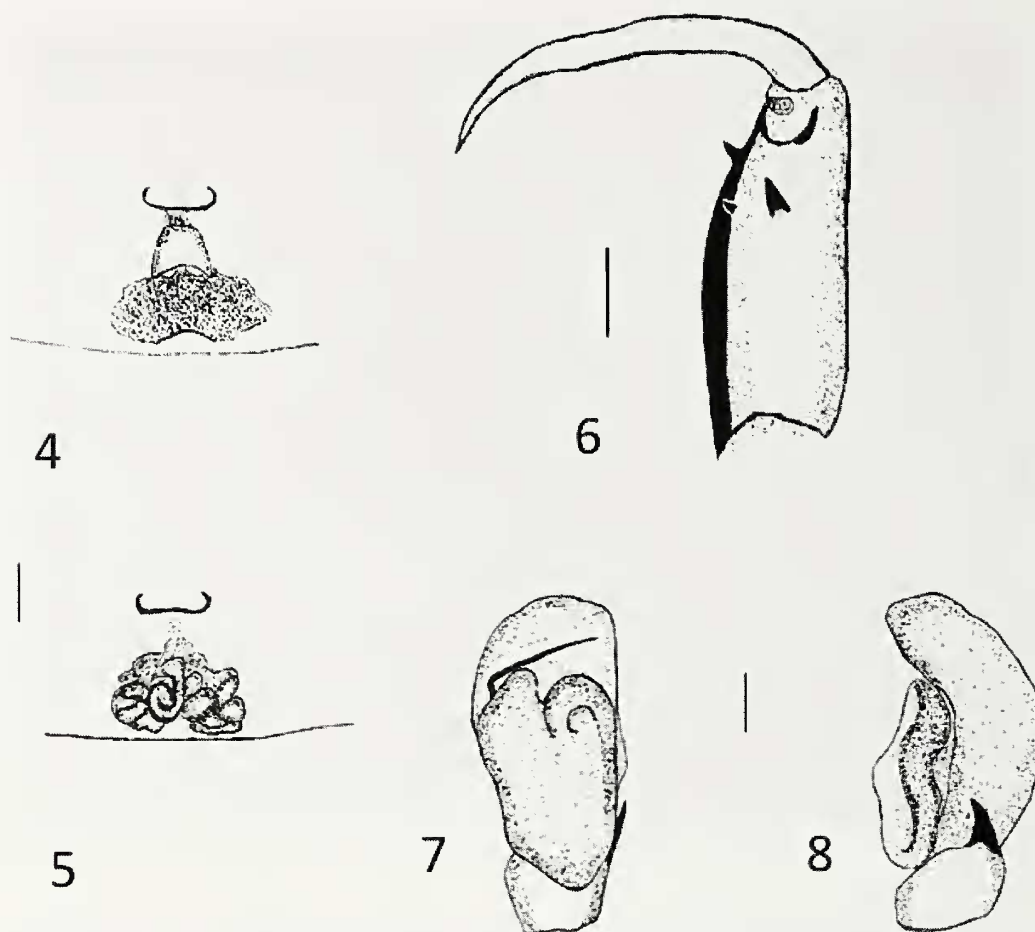
Female.—Female holotype from Presidio County, Texas: Total length 4.2, carapace length 1.9, carapace width 1.6. Ventral spines on first tibiae 2-2-2. Leg formula 1423. Chelicerae with 2 promarginal teeth and one larger retro-marginal tooth. Body almost unicolored yellowish, with two dark speckles (4-6 on paratype females) on the dorsum of the abdomen [very faint slanted bands laterally in paratype female from Cuavas Amarillas, and one female from Ojito Adentro had dark brown markings similar to those found on females of *Hentzia mitrata* (Hentz) (see Richman 1989, fig. 30)]. Chelicerae red-brown, endites

lighter red-brown with pale distal portion. Sternum brown anteriorly, fading to yellow toward the posterior. Legs and palpi pale yellow.

Male.—Male allotype (paratype) from Presidio County, Texas. Total length 4.5, carapace length 2.0, carapace width 1.7. Leg formula 1423. General description close to *H. palmarum*, with 2 promarginal teeth and one larger retro-marginal tooth, all acute and the latter almost exactly in line with the proximal promarginal tooth (Figs. 6, 17). Abdominal pattern distinctive, with light band (appearing as spot) at tip of abdomen. However, as only one male is known this may not be a diagnostic character.

Natural History.—This species seems to be closely associated with tall trees, especially, if not exclusively, cottonwoods (Fig. 1). Attempts to collect it on associated trees and shrubs along the wash at Cuevas Amarillas on the same date as the types failed, despite numerous attempts. Males are only known from March and females from March and October. Adults may be found (like *H. palmarum*) throughout the year.

Remarks.—An illustration by Kaston (1948, fig. 1814) bares some slight resemblance to the epigynum of this species, but resembles the epigynum of *H. fimbriata* even more closely. On the other hand illustrations of the epigynum of *H. palmarum* in Peckham & Peckham (1909, plate 42, fig. 1b) and in Chickering (1944, fig. 42), as well as unpublished drawings by Wayne Maddison (see Proszynski 2007), all agree with the illustrations of Richman (1989). It is not certain exactly what species Kaston was actually illustrating, since none of the specimens examined for the revision of the genus (Richman



Figures 4–8.—*Hentzia alamosa* new species. 4, 5. Female holotype epigynum; 4. Ventral view; 5. Dorsal view. 6–8 Male allotype; 6. Ventral chelicera; 7, 8. Left palp; 7. Ventral view; 8. Retrolateral view. Scales = 0.1 mm for female epigynum and male palp; 0.2 mm for male chelicera.

1989) appeared to match this drawing, which was presumably of a female from Connecticut.

Hentzia fimbriata (F.O. Pickard-Cambridge 1901)

Fig. 16

This species was adequately described by Richman (1989, pp. 306–307, figs. 37–43), but a few specimens have been collected in the United States, far north of the previously northernmost known record in Nayarit, Mexico. Based on the specimens examined it is possible that *H. pima* Richman 1989 is a junior synonym of *H. fimbriata*, as the photograph of the epigynum (Fig. 17) of a female collected from east of Sycamore Canyon resembles fig. 65 in Richman (1989), except for the openings, which in the Sycamore Canyon female are typical for *H. fimbriata*. The dorsal pattern of the abdomen of *H. pima* (Richman 1989, fig. 64) is very similar to that of the female from near Sycamore Canyon. The males collected in Sycamore Canyon and Florida Canyon closely match those of *H. fimbriata*. I suspect that *H. pima* is based on an slightly aberrant female, especially because of the relatively close geographical proximity of the type specimen from the Baboquivari Mountains. However, more material is needed either to verify *H. pima* as a separate species or to synonymize it with *H. fimbriata*.

New Records.—USA: *Arizona*: 1 female, Santa Cruz County, Coronado National Forest, 3–6 km east of Sycamore

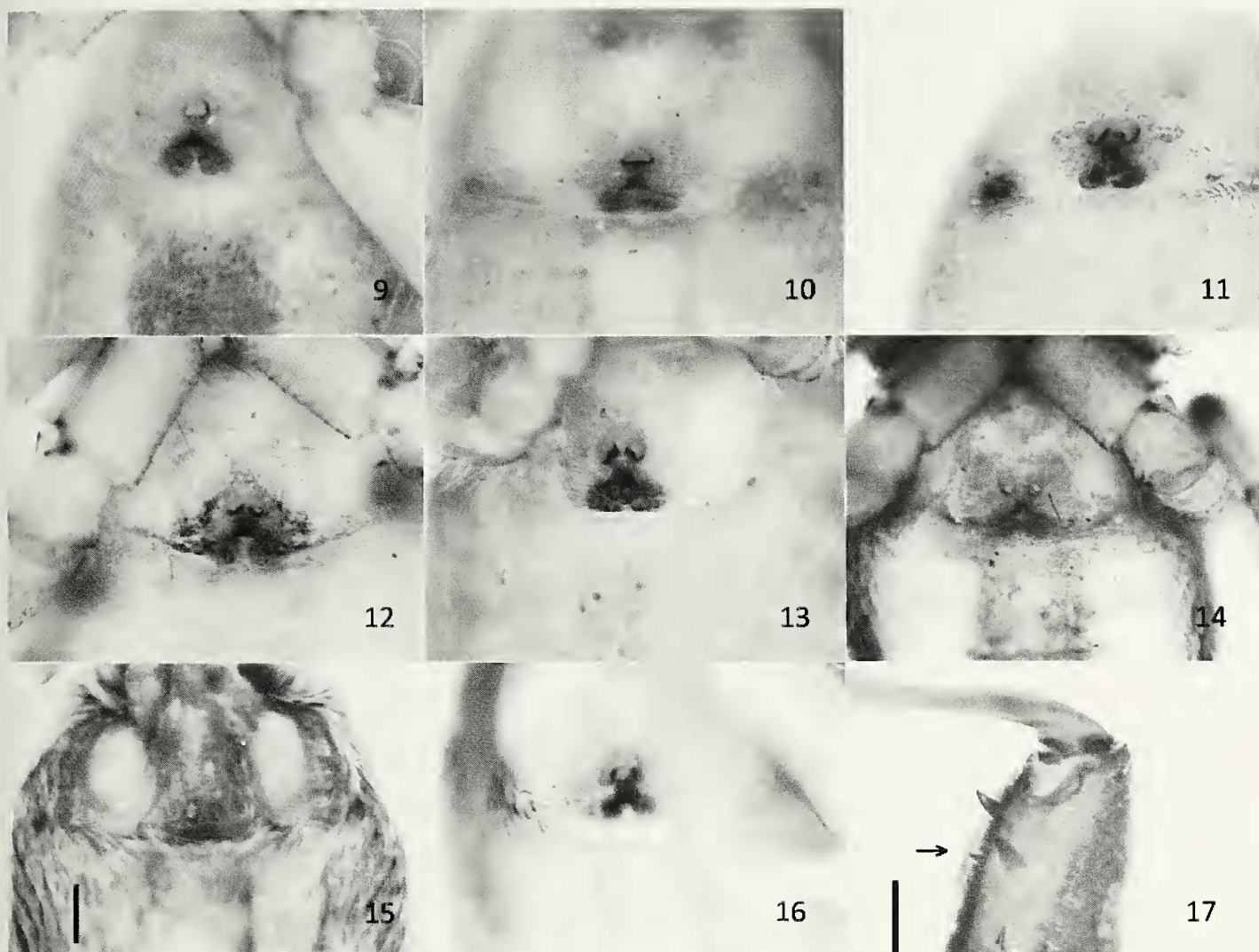
Canyon in Pajarito Mountains (ca 31°20'08"N, 111°08'46"W, ca 1372 m), 29 July 1999, D.B. Richman (beating oak) (NMSU AM 832); 1 male, Sycamore Canyon, Hank and Yank Springs (ca 31°25'39"N, 111°11'33"W), 18 August 1992, W. Maddison, G.B. Edwards & M. McMahon (92-045); 1 male, Pima Co.: Santa Rita Mountains, Florida Canyon, Florida Station (ca 31° 46'28" N, 110 °52'04"W), 13 April 1991, W. Maddison (91-014); 1 female, Pima Co., Santa Rita Mountains, Florida Canyon, Florida Station (ca 31° 46'28"N, 110 °52'04"W), 3 March 1994, female (presumably *H. fimbriata*, not identified) collected by W. Maddison (94-008) (last three records all in W. Maddison collection, University of British Columbia, Vancouver, British Columbia, Canada).

Hentzia palmarum (Hentz 1831)

Figs. 11–15

In the process of comparing this species to specimens of *Hentzia alamosa* new species from Big Bend Ranch State Park, Presidio County, Texas, several new records were discovered. For a description of this species see Richman (1989, pp. 296–302, figs. 16–27).

New Records.—USA: *Texas*: 1 male, 4 females, Edwards County, near Rock Springs (30°01'29"N, 100°12'21"W), January 1994; 3 females, Mason County, near Mason (ca 30°44'56"N, 99°13'50"W), January 1994; 1 male, 5 females, Zavala County, near Nueces (ca 28°47'18"N, 99°49'09"W), January 1994. All



Figures 9–17.—*Hentzia* species. 9, 10. *Hentzia alamosa* new species, female paratype epigyna, ventral views; 9. From Cuevas Amarillas, Big Bend State Park, Presidio County, Texas; 10. From Ojito Adentro, Big Bend State Park, Presidio County, Texas. 11–15. *Hentzia palmarum* (Hentz) female epigyna, ventral views; 11. From Archbold Biological Station, Highland County, Florida; 12. From Madina County, Texas; 13. From Travis County, Texas; 14. From Zavala County, Texas; 15. From Edwards County, Texas. 16. *Hentzia fimbriata* female epigynum, ventral view, near Sycamore Canyon, Santa Cruz County, Arizona. 17. *Hentzia alamosa* new species male chelicerae, male allotype (paratype), from Cuevas Amarillas, Big Bend State Park, Presidio County, Texas. Note two acute promarginal teeth and one acute retromarginal tooth, similar to that of male *Hentzia palmarum*, but with the proximal teeth nearly in line. All epigynal photos to same scale; both bars = 0.2 mm.

specimens were taken from irrigation tubes in pecan orchards by J. W. Stewart. All specimens deposited in TAMUIC.

Discussion.—The scattered distribution of most *Hentzia* species in the western United States and Mexico, usually in riparian areas, suggests speciation events by the founder effect, with a few individuals being accidentally introduced (perhaps by storms) to isolated favorable habitats. The other possibility may be isolation of populations of more widely spread species (such as *H. palmarum* or *H. fimbriata*) in refugia because of desert expansion, followed by subsequent speciation events. The presence of *Hentzia fimbriata* in Sycamore Canyon is an exception to the isolated populations in other parts of the southwestern USA and northwestern Mexico, as this species is widespread in Mexico. It is likely that its distribution follows the Sierra Madre and the watersheds of Mexican rivers draining into the Gulf of California. Sycamore Canyon, which drains into the Rio

Altar in the Rio de la Concepcion drainage in Sonora, and where the U.S. specimens of *H. fimbriata* have been collected, is unusual in the variety of jumping spiders found there that are primarily associated with other geographical ranges. These include *Zygoballus rufipes* Peckham & Peckham 1885 (Mexico and eastern United States), *Phidippus tux* Pinter 1970 (central Mexico), and *Sarinda hentzi* (Peckham & Peckham 1892) (eastern United States) (all collected by the author). Because of the similar morphological features, future research on the genus *Hentzia* should include mitochondrial DNA analysis of as many species as possible in order to clear up the actual phylogenetic source and relationships of these species, especially in the *palmarum* species group. This is unfortunately beyond the scope of this paper and would require collection of fresh material from Cuba and Mexico, as well as the USA, even if limited to the *palmarum* group.

ACKNOWLEDGMENTS

I thank the administration and staff at Big Bend Ranch State Park, headquartered in Presidio, Texas, and Wayne Maddison for earlier access to his *Hentzia* specimens from Arizona and for checking his collection for further records. I also thank Norman Platnick and the American Museum of Natural History, New York, New York, for providing the funds to support the second trip to Big Bend Ranch State Park, Texas, during which the Cuavas Amarillas type series was collected. Rebecca Creamer, Bruce Cutler, G. B. Edwards and Soum Sanogo read various versions of this manuscript and offered several helpful suggestions. Jeffrey Drake of the United States Department of Agriculture, APHIS-PPQ-Center for Plant Health, Science and Technology, and affiliated faculty at the Biological Control Laboratory at New Mexico State University kindly allowed me to use their electronic camera and dissecting microscope to photograph details of anatomy for Figs. 9–17. D. Allen Dean of Texas A & M University Insect Collection (TAMUIC), College Station, Texas, loaned me specimens of *Hentzia palmarum* from several Texas counties for comparison to the Big Bend specimens. This research was supported in part by the Agricultural Research Station, New Mexico State University.

LITERATURE CITED

- Chamberlin, R.V. 1924. The spider fauna of the shores and islands of the Gulf of California. *Proceedings of the California Academy of Sciences* 12:561–694.
- Chickering, A.M. 1944. The Salticidae (jumping spiders) of Michigan. *Papers of the Michigan Academy of Science* 29:139–222.
- Hentz, N.M. 1832. On North American spiders. *American Journal of Science* 21:99–122.
- Hentz, N.M. 1846. Descriptions and figures of the Araneides of the United States. *Boston Journal of Natural History* 5:352–370.
- Kaston, B.J. 1948. Spiders of Connecticut. *State of Connecticut State Geological and Natural History Survey Bulletin* 70:1–874.
- Kaston, B.J. 1978. *How to Know the Spiders*. McGraw-Hill, Boston, Massachusetts.
- Peckham, G.W. & E.G. Peckham. 1909. Revision of the Attidae of North America. *Transactions of the Wisconsin Academy of Sciences, Arts and Letters* 16:355–646.
- Pickard-Cambridge, F.O. 1901. Arachnida - Araneida and Opiliones. *In* *Biologia Centrali-Americana, Zoology*. London, 2:193–312.
- Prószyński, J. 2007. Monograph of the Salticidae (Araneae) of the world. Online at <http://salticidae.org/salticid/main.htm>.
- Richman, D.B. 1989. A revision of the genus *Hentzia* (Araneae, Salticidae). *Journal of Arachnology* 17:285–344.

Manuscript received 19 May 2009, revised 6 October 2009.